



PCT/GB 00/03398



REC'D 28 SEP 2000

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The Patent Office

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Request for grant of a patent

(See the notes on the back of this form. You can also get an explanatory leaflet from the Patent Office to help you fill in this form)

1. Your reference

P54511GB

2. Patent application number

(The Patent Office will fill in this part)

FILED HEREWITH

3. Full name, address and postcode of the or of each applicant (underline all surnames)

SNAP-ON EQUIPMENT LIMITED
UNIT 12, HORSLEY'S FIELDS
KING'S LYNN
NORFOLK
PE30 5UJ

Patents ADP number (if you know it)

If the applicant is a corporate body, give the country/state of its incorporation

ENGLAND, UK 0164957700.

4. Title of the invention

POSITION-DEFINING AND ENERGY-ISOLATING MOUNTINGS

5. Name of your agent (if you have one)

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Patents ADP number (if you know it)

001644009

6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and (if you know it) the or each application number

Country Priority application number (if you know it) Date of filing (day / month / year)

7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

Number of earlier application

Date of filing (day / month / year)

8. Is a statement of inventorship and of right to grant of a patent required in support of this request? (Answer 'Yes' if:

- a) any applicant named in part 3 is not an inventor, or
 - b) there is an inventor who is not named as an applicant, or
 - c) any named applicant is a corporate body.
- See note (d))

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POSITION-DEFINING AND ENERGY-ISOLATING MOUNTINGS

This invention relates to position-defining and energy-isolating mountings. An example of the application 5 of the invention is to microphone mountings for use in relation to vehicle shape-determination systems of the kind disclosed in WO 93/04381 in which the present invention provides a mounting of the kind required for the array of microphones (18) which are mounted with respect to a beam 10 (10) for use in the manner briefly disclosed and illustrated in data items (54) and (57) on the front page of the above-identified WO publication.

The present invention is not limited in its application to that specific utility and provides 15 significant advantages in relation to the mounting of like emitters or sensors of various kinds, including thermal and electrical and optical sensors, particularly for electronic measuring equipment, in which a facility for ease of mounting and/or dismounting and accompanied by a 20 satisfactory level of position-definition when mounted, in combination with isolation (to the degree necessary for the particular practical application) from the transmission to or from the mounted sensor or emitter of acoustic or electrical or other energy. In the case of the specific 25 embodiment disclosed below, the mounting provides location definition and ease of mounting and dismounting together with a satisfactory level of isolation with respect to acoustic energy.

In the case of existing mountings for components of 30 the kind with which the present invention is concerned, such as miniature microphones, which require accurate placement, ease of mounting, ease of dismounting or replacement, and a degree of physical shielding from impact or similar damage, the currently available solution to this 35 interplay of (to some extent) conflicting physical

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accommodating a degree of non-circularity (such as ovality) in the mounting openings provided in the support for the acoustic emitter or detector or other sensor, without prejudicing the accuracy of mounting. In general terms, the
5 matching of a circular fitting to a circular receptor is not readily achievable in practical circumstances in relation to field-used articles of this kind without difficulties and/or costs and some improvements in this respect are needed.

10 An object of the present invention is to provide a mounting method and apparatus, particularly applicable to the mounting of acoustic sensors and emitters, but which may have novelty and/or inventive step in relation to features which are wide enough to embrace mountings usable
15 outside the field of acoustic emitters and sensors, as identified above, and providing improvements in relation to one or more of the factors identified above and/or improvements generally therein.

20 According to the invention there is provided a method and apparatus for mounting an acoustic emitter or detector, or other sensor, as defined in the accompanying claims.

25 In embodiments described below there is provided a method and apparatus wherein a mounting for a sensor such as an acoustic emitter or detector, provides location definition and energy isolation by means of a single unitary structure comprising a non-elastomeric polymeric plastics material. This represents one important aspect of the present invention, which relates to the unexpected discovery that a relatively high degree of energy isolation
30 can be achieved without the need to employ elastomeric polymers for reducing the level of energy transmission to acceptable limits, both in relation to acoustic or certain other energy forms. More specifically, in the embodiments we found that polymers such as polypropylene provide at the
35 acoustic frequencies discussed below a required level of

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support comprises a non-elastomeric polymeric plastic bushing which is adapted to be a press fit into a complimentary mounting opening in a support therefor, and the bushing provides contact at a plurality of at least 5 three spaced locations around said opening, whereby said bushing can accommodate a degree of ovality of said mounting opening while nevertheless accurately defining the mounted position of said emitter or detector with respect to said support. In the embodiments the contact regions of 10 the bushing are arcuate in form and in fact four are provided in the illustrated embodiments.

By providing a snap-fit or clip-fit mounting which engages and grips the emitter or sensor and its lead there is not only provided the mechanical advantage identified 15 above but also a significant simplification of the assembly and disassembly method since the snap-fit or clip-fit assembly technique is reversible and disassembly is just as easily achieved, and the need for endwise insertion and the accompanying delays and potential damage causation is 20 eliminated by the side-wise (as opposed to end-wise) assembly technique.

Also in the embodiments, the snap-fit bushing is provided as a one-piece assembly in which two halves are interconnected by hinge-means permitting ready (and 25 accurate) cooperation for snap or clip fitting and unfitting as needed. In addition, there may be provided on mounting a visible orientation mark so that the bushing or collet when installed on its beam or other structure is at a predetermined orientation with respect to it.

30 In the embodiments, in addition to polypropylene other non-elastomeric polymeric materials may be employed such as nylon derivatives, acetyl and abs and other non-elastomers.

Embodiments of the invention will now be described by way of example with reference to the accompanying drawings 35 in which:

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relationship thereto. The microphone cable passes lengthwise of the mounting halves and through an opening (not shown) in the region of hinge means 16. When the mounting halves are closed thereby forming a bushing for 5 the microphone, the microphone cable is gripped between portions 28 and 30 of the mounting halves, thereby causing these to provide a strong mechanical link between the cable and the mounting 10 whereby tension applied to the cable is directly transferred to the mounting and diverted from the 10 cable connections of the microphone.

As shown in fig 7 mounting or collet 10 when assembled, is adapted to be a press fit into a mounting opening (for example a circular opening as identified at 15 32) in a support (not shown) therefor, and the mounting or bushing providing contact at a plurality of spaced locations 34 (in this case four locations), whereby the bushing or mounting can accommodate a degree of non-circularity of the opening 34 without prejudicing the accuracy of mounting. In use, the polypropylene material 20 of the mounting 10 serves to provide acoustic insulation to the microphone while enabling it to be push fitted into its mounting beam (not shown) as disclosed in the above specification in a convenient and easy manner.

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defining and vibration-isolating structural comprising a single unitary structure comprising a non-elastomeric polymeric plastics material and said material providing opposed portions of bushing means adapted to snap-fit together on opposite sides of said acoustic emitter or detector.

5 3. A mounting for an acoustic emitter or detector adapted to removably mount same with respect to a support,
10 characterised by said mounting comprising non-elastomeric polymeric plastic bushing elements adapted to snap-fit or clip together to engage said emitter or detector and form a mounting bushing therefor.

15 4. A mounting for a sensor or the like adapted to removably mount same with respect to a support while at least partially electrically or thermally or acoustically isolating same from said support, characterised by said mounting comprising a polymeric plastic bushing element
20 adapted to be a press fit into a mounting opening in said support, and said bushing providing contact at a plurality of at least three spaced locations with respect to said mounting opening, whereby said bushing can accommodate a degree of non-circularity of said opening.

25 5. A mounting for a sensor or the like adapted to removably mount same with respect to a support while at least partially electrically or thermally isolating same from said support, characterised by said mounting comprising polymeric plastic bushing elements adapted to snap-fit or clip together to engage said sensor and form a mounting bushing therefor.

30 6. A mounting according to any one of claims 3 to 5
35 characterised by said bushing elements being adapted to

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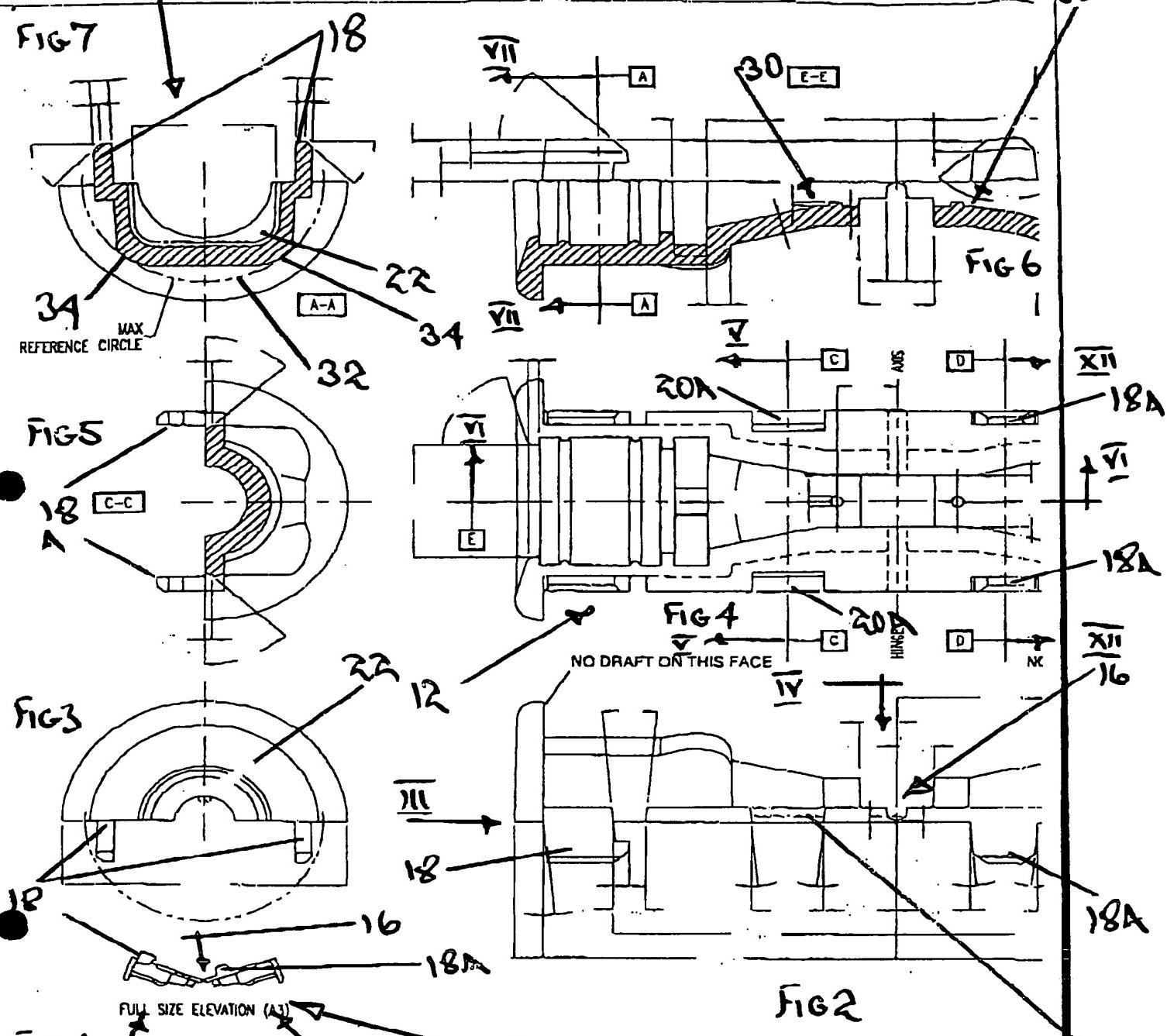
structure comprising a non-elastomeric polymeric plastics material; and

b) said bushing means comprising a structure comprising two main structural components respectively providing said 5 opposed portions of said polymeric bushing elements and adapted to snap-fit together on opposite sides of said acoustic emitter or detector.

9. Apparatus for mounting an acoustic emitter or detector 10 with respect to an acoustically transmissive structural mounting member characterised by providing location-defining and vibration-isolating structural comprising a single unitary structure comprising a non-elastomeric polymeric plastics material and said material providing 15 opposed portions of bushing means adapted to snap-fit together on opposite sides of said acoustic emitter or detector.

10. A method of mounting an acoustic emitter or detector 20 substantially as described herein with reference to the accompany drawings.

11. Apparatus for mounting an acoustic emitter or detector 25 substantially as described herein with reference to the accompany drawings.



EST. MASS kg	MATERIAL SPECIFICATION BLACK POLYPROPYLENE			HEAT TREATMENT/FINISH ERODED	RAW MATERIAL
0 - 0mm	0 - 0mm	1 - 3 mm	3 +mm	DRAWN APPROVED	DATE
+/- 0	+/- 0	+/- 0 "	+/- 0		THREAD CLASS METRIC: H6 g6 INCH: 2A 2B

